



Our Reference: UMJ-116-D (UM-2172p2)

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Ralph T. Yang et al.
Serial Number: 10/613,131
Filing Date: July 3, 2003
Examiner/Art Group Unit: Unknown/1764
Title: SELECTIVE SORBENTS FOR PURIFICATION OF HYDROCARBONS

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Commissioner for Patents
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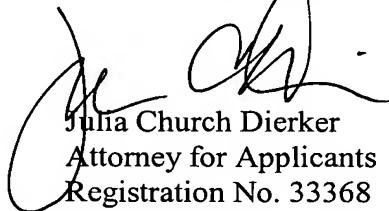
Sir:

Applicants hereby cite the references listed in the attached forms PTO-1449 as relating to the subject matter of the invention described and claimed in the above-identified application.

Since a copy of each of the cited references had been previously cited by or submitted to the Patent Office during prosecution of the parent application, namely U.S. Patent Application S.N. 10/234,681, filed on September 04, 2002 by inventors Ralph T. Yang, Frances H. Yang, Akira Takahashi and Arturo J. Hernandez-Maldonado, for the application entitled "Selective Sorbents for Purification of Hydrocarbons," pursuant to 37 C.F.R. § 1.98(d), a copy of each of these references is not being provided.

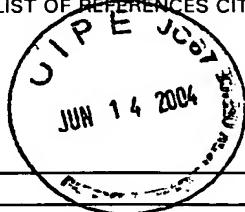
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	APPLICANT RALPH T. YANG ET AL	
	FILING DATE JULY 03, 2003	GROUP 1764

U.S. PATENT DOCUMENTS

EXAMINERS INITIALS	PATENT NO.	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE
	3,410,794	Nov 12, 1968	Li			
	3,960,703	Jun 01, 1976	Dielacher et al.			
	4,179,361	Dec 18, 1979	Michlmayr			
	4,188,285	Feb 12, 1980	Michlmayr			
	5,730,860	Mar 24, 1998	Irvine			
	6,118,037	Sep 12, 2000	Piccoli et al.			
	6,215,037	Apr 10, 2001	Padin et al.			
	6,402,939	Jun 11, 2002	Yen et al.			
	6,423,881	Jul 23, 2002	Yang et al.			

FOREIGN PATENT DOCUMENTS

EXAMINERS INITIALS	DOCUMENT NO.	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION
	54041844	04 Mar 1979	Abstracts of Japan			
	GB 2005299	19 Apr 1979	United Kingdom			
	55098123	25 Jul 1980	Abstracts of Japan			
	DD 208628	04 Apr 1984	Germany			
	0 275 855 A1	27 Jul 1988	European Patent Office			
	DE 39 40 428 A1	13 Jun 1991	Germany			
	WO 98/56875	17 Dec 1998	WIPO			

OTHER REFERENCES

	Barthomeuf, D., and B.-H. Ha, "Adsorption of Benzene and Cyclohexane on Faujasite-Type Zeolites," <i>J. Chem. Soc. Faraday Trans.</i> , 69 , pp. 2147-2157 (1973), Abstract only
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EXAMINER	DATE CONSIDERED
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OTHER REFERENCES

	Becke, A. D., "Density-functional thermochemistry. II. The effect of the Perdew-Wang generalized-gradient correlation correction," <i>J. Chem. Phys.</i> , 97 , No. 12, pp. 9173-9177 (15 December 1992)
	Becke, A. D., "A new mixing of Hartree-Fock and local density-functional theories," <i>J. Chem. Phys.</i> , 98 , No. 2, pp. 1372-1377 (15 January 1993)
	Becke, A. D., "Density-functional thermochemistry. III. The role of exact exchanges," <i>J. Chem. Phys.</i> , 98 , No. 7, pp. 5648-5652 (1 April 1993)
	Chen, N., and R. T. Yang, "Ab Initio Molecular Orbital Study of Adsorption of Oxygen, Nitrogen, and Ethylene on Silver-Zeolite and Silver Halides," <i>Ind. Eng. Chem. Res.</i> , 35 , pp. 4020-4027 (1996)
	Cheng, L. S., and R. T. Yang, "Improved Horvath-Kawazoe Equations Including Spherical Pore Models for Calculating Micropore Size Distribution," <i>Chem. Eng. Sci.</i> , 49 , pp. 2599-2609 (1994), Abstract only
	Demontis, P., S. Yashonath, and M. L. Klein, "Localization and Mobility of Benzene in Sodium-Y Zeolite by Molecular Dynamics Calculations," <i>J. Phys. Chem.</i> , 93 , pp. 5016-5019 (1989)
	Doong, S. J., and R. T. Yang, "A Simple Potential-Theory Model for Predicting Mixed-Gas Adsorption," <i>Ind. Eng. Chem. Res.</i> , 27 , pp. 630-635 (1988)
	Eldridge, R. B., "Olefin/Paraffin Separation Technology: A Review," <i>Ind. Eng. Chem. Res.</i> , 32 , pp. 2208-2212 (1993)
	Fitch, A. N., H. Jobic, and A. Renourez, "Localization of Benzene in Sodium-Y Zeolite by Powder Neutron Diffraction," <i>J. Phys. Chem.</i> , 90 , pp. 1311-1318 (1986)
	Hao, J., T. Tanaka, H. Kita, and K. Okamoto, "The Pervaporation Properties of Sulfonyl-Containing Polyimide Membranes to Aromatic/Aliphatic Hydrocarbon Mixtures," <i>J. Membr. Sci.</i> , 132 , pp. 97-108 (1997)
	Hay, P. J. and W. R. Wadt, "Ab initio effective core potential for molecular calculations: Potentials for K to Au including the outermost core orbitals," <i>J. Chem. Phys.</i> , 82 , No. 1: pp. 299-310 (1 January 1985)
	Hay, P. J. and W. R. Wadt, "Ab initio effective core potentials for molecular calculations. Potentials for the transition metals atoms Sc to Hg," <i>J. Chem. Phys.</i> , 82 , pp. 270-283 (1 January 1985)
	Ho, W. S., G. Doyle, D. W. Savage, and R. L. Pruitt, "Olefin Separations via Complexation with Cuprous Diketonate," <i>Ind. Eng. Chem. Res.</i> , 27 , pp. 334-337 (1988)
	Huang, H. Y., R. T. Yang, and N. Chen, "Anion Effects on the Adsorption of Acetylene by Nickel Halides," <i>Langmuir</i> , 15 , pp. 7647-7652 (1999)
	Huang, H. Y., J. Padin and R. T. Yang, "Anion and Cation Effects on Selective Olefin Adsorption on Silver and Copper Halides: Ab Initio Effective Core Potential Study of π -Complexation," <i>J. Phys. Chem. B.</i> , 103 , pp. 3206-3212 (1999)
	Huang, H. Y., J. Padin and R. T. Yang, "Comparison of π -Complexations of Ethylene and Carbon Monoxide and Cu^+ and Ag^+ ," <i>Ind. Eng. Chem. Res.</i> , 38 , pp. 2720-2725 (1999)
	Hutson, N. D., B. A. Reisner, R. T. Yang, and B. H. Toby, "Silver Ion-Exchanged Zeolites Y, X and Low Silica X: Observations of Thermally Induced Cation/Cluster Migration and the Resulting Effects on Equilibrium Adsorption of Nitrogen," <i>Chem. Mater.</i> , 12 , pp. 3020-3031 (2000)

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OTHER REFERENCES			
			Jarayaman, A, R. T. Yang, C. L. Munson and D. Chinn, "Deactivation of π -Complexation Adsorbents by Hydrogen and Rejuvenation by Oxidation," <i>Ind. Eng. Chem. Res.</i> , 40 , pp. 4370-4376 (2001)
			King, D. L, C. Faz and T. Flynn, "Desulfurization of Gasoline Feedstocks for Application in Fuel Reforming," <i>SAE Paper 2000-01-0002</i> , <i>Soc. Automotive Engineers</i> , pp. 9-13 (2000)
			Kitagawa, T., T. Tsunekawa, and K. Iwayama, "Monte Carlo Simulation on Adsorptions of Benzene and Xylenes in Sodium-Y Zeolites," <i>Microporous Mater.</i> , 7 , pp. 227-233 (1996)
			Klemm, E., J. Wang, and G. A. Emig, "A Comparative Study of the Sorption of Benzene and Phenol in Silicalite, HAlZSM-5 and NaAlZSM-5 by Computer Simulation," <i>Microporous Mater.</i> , 26 , pp. 11-21 (1998)
			Laboy, M. M., I. Santiago, and G. E. Lopez, "Computing Adsorption Isotherms for Benzene, Toluene, and p-Xylene in Heulandite Zeolite," <i>Ind. Eng. Chem. Res.</i> , 38 , pp. 4938-4945 (1999)
			Larsen, S. C. A. Aylor, A. T. Bell and J. A. Reimer, "Electron Paramagnetic Resonance Studies of Copper Ion-Exchanged ZSM-5," <i>J. Phys. Chem.</i> , 98 , pp.11533-11540 (1994)
			Lee, C., Yang, W. and Parr, R.G., "Development of the Colle-Salvetti correlation-energy formula into a functional of the electron density," <i>Phys. Rev. B</i> , 37 , No. 2, pp. 785-789 (15 January 1988)
			Lewis, W. K., E. R. Gilliland, B. Chertow, and W. P. Cadogan, "Adsorption Equilibria - Hydrocarbon Gas Mixtures," <i>Ind. Eng. Chem.</i> , 42 , pp. 1319-1326 (1950)
			Li, Norman N., "Separation of Hydrocarbons by Liquid Membrane Permeation," <i>Ind. Eng. Chem. Process Des. Dev.</i> , 10 , pp. 215-221 (1971)
			Li, Y., and J. N. Armor, "Catalytic Combustion of Methane over Palladium Exchanged Zeolites," <i>Appl. Catal.</i> , B3 , Issue 4, pp. 275-282 (1994), Abstract only
			Luo, Guohua et al., "Removal of thiophene from coke-oven benzene by selective adsorption on zeolites," Database CA [Online] Abstract No. 132:110289, <i>Chemical Abstracts Service</i> , Ranliaohuaxue Xuebao (1999)
			O'Malley, P. J., and C. J. Braithwaite, "Ab Initio Molecular Orbital and Molecular Graphics Studies of Benzene Adsorption in NaY Zeolite," <i>Zeolites</i> , 15 , pp. 198-201 (1995)
			Padin, J., and R. T. Yang, "Tailoring New Adsorbents Based on π -Complexation: Cation and Substrate Effects on Selective Acetylene Adsorption," <i>Ind. Eng. Chem. Res.</i> , 36 , pp. 4224-4230 (1997)
			Padin, J. and R. T. Yang, "New Sorbents for olefin/paraffin separations by adsorption via π -complexation: synthesis and effects of substrates," <i>Chem. Eng. Sci.</i> , 55 , pp. 2607-2616 ()
			Padin, J., R. T. Yang and C. L. Munson, "New Sorbents for Olefin/Paraffin Separations and Olefin Purification for C ₄ Hydrocarbons," <i>Ind. Eng. Chem. Res.</i> , 38 , pp. 3614-3621 (1999)
			Parkinson, G., "Diesel Desulfurization Puts Refiners in a Quandary," <i>Chemical Engineering</i> , February 37, pp. 39-41 (2001)
			Pellenq, R. J.-M., and D. Nicholson, "In-Framework Ion Dipole Polarizabilities in Non-Porous and Porous Silicalites and Aluminosilicates, Determined from Auger Electron Spectroscopy Data," <i>J. Chem. Soc. Faraday Trans.</i> , 89 , pp. 2499-2508 (1993), Abstract only
			Reed, A. E., Weinstock, R.B. and Weinhold, F., "Natural population analysis," <i>J. Chem. Phys.</i> , 83 , No. 2, pp. 735-746 (15 July 1985)

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OTHER REFERENCES	
	Rege, S. U., J. Padin and R. T. Yang, "Olefin/Paraffin Separations by Adsorption: π -Complexation vs. Kinetic Separation," <i>AIChE J.</i> , 44 , No. 4, pp. 799-809 (April 1998)
	Russo, T. V., R. L. Martin, P. J. Hay, "Effective Core Potentials for DFT Calculations," <i>J. Phys. Chem.</i> , 99 , pp. 17085-17087 (1995)
	Safarik, D. J., and R. B. Eldridge, "Olefin/Paraffin Separations by Reactive Adsorption: A Review," <i>Ind. Eng. Chem. Res.</i> , 37 , pp. 2571-2581 (1998)
	Salem, A. S. H. and H. S. Hamid, "Removal of Sulfur Compounds from Naphtha Solutions Using Solid Adsorbents," <i>Chem. Eng. Tech.</i> , 20 , pp. 342-347 (1997)
	Snurr, R. Q., A. T. Bell, and D. N. Theodorou, "A Hierarchical Atomistic/Lattice Simulation Approach for the Prediction of Adsorption Thermodynamics of Benzene in Silicalite," <i>J. Phys. Chem.</i> , 98 , pp. 5111-5119 (1994)
	Spencer, C. F., and S. B. Adler, "A Critical Review of Equations for Predicting Saturated Liquid Density," <i>J. Chem. Eng. Data</i> , 23 , pp. 82-89 (1978)
	Takahashi, A., F. H. Yang and R. T. Yang, "Aromatics/Aliphatics Separation by Adsorption: New Sorbents for Selective Aromatics Adsorption by π -Complexation," <i>Ind. Eng. Chem. Res.</i> , 39 , pp. 3856-3867 (2000)
	Takahashi, A., R. T. Yang, C. L. Munson and D. Chinn, "Cu(I)-Y Zeolite as a Superior Adsorbent for Diene/Olefin Separation," <i>Langmuir</i> , 17 , pp. 8405-8413 (2001)
	Viruela-Martin, P., C. M. Zicovich-Wilson, and A. Corma, "Ab Initio Molecular Orbital Calculations of the Protonation Reaction of Propylene and Isobutene by Acidic OH Groups of Isomorphously Substituted Zeolites," <i>J. Phys. Chem.</i> , 97 , pp. 13713-13719 (1993)
	Wadt, W. R. and P. J. Hay, "Ab initio effective core potentials for molecular calculations: Potentials for main group elements Na to Bi," <i>J. Chem. Phys.</i> , 82 , No. 1, pp. 284-298 (1 January 1985)
	Weitkamp, J., M. Schwark and S. Ernest, "Removal of Thiophene Impurities from Benzene by Selective Adsorption in Zeolite ZSM-5," <i>J. Chem. Soc. Chem. Commun.</i> , pp. 1133-1134 (1991)
	Williams, D. E., and S. R. Cox, "Nonbonded Potentials for Azahydrocarbons: The Importance of the Coulombic Interaction," <i>Acta Crystallogr.</i> , B40 , pp. 404-417 (1984)
	Woods, G. B., and J. S. Rowlinson, "Computer Simulation of Fluids in Zeolite X and Y," <i>J. Chem. Soc., Faraday Trans.</i> , 85 , pp. 765-781 (1989), Abstract only
	Wu, Z., S. S. Han, S. H. Cho, J. N. Kim, K. T. Chue, and R. T. Yang, "Modification of Resin-Type Adsorbents for Ethane/Ethylene Separation," <i>Ind. Eng. Chem. Res.</i> , 36 , pp. 2749-2756 (1997)
	Xie, You-Chang, and Y. Q. Tang, "Spontaneous Monolayer Dispersion of Oxides and Salts onto Surfaces of Supports: Applications to Heterogeneous Catalysis," <i>Advances in Catalysis</i> , 37 , pp. 1-43 (1990)
	Yang, R. T. and E. S. Kikkilides, "New Sorbents for Olefin/Paraffin Separations by Adsorption via π -Complexation," <i>AIChE J.</i> , 41 , No. 3, pp. 509-517 (March 1995)
	Yang, R. T., "Gas Separation by Adsorption Processes," <i>Butterworths Series in Chemical Engineering</i> , Chapter I-II: pp: 1-48 (1987,)

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